

lump earnings think-pair-share
Dr. Sarah's MAT 1010: Introduction to Mathematics

Part A: Answer all the questions below and type your responses for the forum. Add a new discussion topic with the subject as your preferred name and the post as your responses and any questions you have.

Part B: Respond separately to at least two of your classmates postings in a meaningful way. Use their preferred name (like Dr. Sarah is mine), with something new that justifies your position on (at least) one of the questions. Don't just say, "Yeah, I agree." Instead, say, "Yes preferred name, but we also need to consider..." Or, "Preferred name, I don't agree because..." You might also pose questions, answer questions, extend ideas, or compare and contrast your responses and summarize what you chose and why.

1. If a certificate of deposit (c.d.) will be compounded monthly at 3% for 14 years, and William put in \$2000, then what is the formula that represents how much would the c.d. be worth at the end of 14 years?
 - a) $2000(1 + .03)^{14}$
 - b) $2000(1 + \frac{.03}{14})^{14 \times 12}$
 - c) $2000(1 + \frac{.03}{12})^{14 \times 12}$
 - d) $2000(1 + \frac{.03}{12})^{14}$
 - e) none of the above
2. If a certificate of deposit (c.d.) will compounded monthly at 3% for 14 months, and William put in \$2000, how much would the c.d. be worth at the end of 14 months (answer in dollars and cents)?

Caution: the previous question asks about 14 years but this problem asks about 14 months.
3. Which of the following are true regarding the earned rate of a fund?
 - a) the earned rate of a fund is the same as the lent rate that is charged by the lender
 - b) the rates each part of the fund actually receives (or loses) determines the average earned rate of the fund (weighted average)
 - c) to find the average earned rate of a fund, we can use the beginning and ending values of the fund and calculate the rate in Excel
 - d) both b) and c)
4. Was the lump sum formula appropriate to use in the case of the Benjamin Franklin fund, when money was going in and out of the account?
 - a) no—whoops, we should have used a different formula as it is not a lump sum.

more on the other side

- b) yes—there is no new principal money added in during a given 100 year period, only the lump principal. In between, any money coming in is only as the loan (a part of the lump sum) and it's interest (“that which is between”).
- c) other

5. Which of the following apply to the first day of class?

- we used each short-term compounding period (local) to build upon and derive a global formula for the total savings plus interest
- we took a process that originally had too many terms (one for each compounding period)
- we reduced it to something manageable by finding the commonality of multiply by $(1 + \text{rate})$ and applying the algebra of exponents
- this class is intended to be “plug and chug” so we didn't derive the lump sum formula—it was presented as mathematical magic

- a) all but the last statement
- b) only the last statement
- c) other

6. If we put in \$100 now and leave it there for 25 years compounded monthly at 5%, then how much interest, in dollars, will we have earned?

7. How much should we put in now as a lump sum if we want the future value (FV) to be \$500 after 14 years of an account paying 1% compounded annually (i.e. what is the present value (PV) of the account)?

8. What does Warren Buffett mean by an economic Pearl Harbor?

9. If you were going to design an independent, self-sustaining, space mission, who travel far away to continually explore the geometry of the universe, would you charge interest within it? If so, why and for what kind of items and if not, why not?

10. What do you think best explains why it does make sense to charge interest?

11. What do you think is most compelling of why it might not make sense to charge interest?